

Title: Signal Peptides, Nucleic Acid Molecules and Methods for
Treatment of Caries
Inventor Name: Dennis Cvitkovitch et al.
Application No.: 09/833,017, Filing Date: April 10, 2001
Attorney Docket No. 1889-00401

Figure 2A.

[ATGAAAAAAACACTATCATTAAAAATGACTTTAAAGAAATTAAGACTGATGAATTAGA
GATTATCATGGCGGA (AGCGGAAGCCTATCAACATTTCCGGCTGTTAACAGAAGTT
TTACACAAGCTTGGGAAAA)] TAA

Figure 2B.

AGCGGAAGCCTATCAACATTTCCGGCTGTTAACAGAAGTTTACACAAGCTTGGGA
AAA

Figure 2C.

[ATGAATGAAGCCTTAATGATACTTCAAATGGTTATTAACCTATCTAACCGT
TCTATTCTCTGTTCTATTCTAAGGTAAAGTAATGTCACCTATCGAAAAAA
GGAATTAACCTTTTCGATAAGCAATTCTGATAATGATTGCTGTTACGA
TGGTGAACGTAAACCTGTTTATCCTGCAGAGCCTCTTATTATAGCTTAT
CAATTATCTTAATAGACAGAATAGTCTTCTCAAATATATTATGGTCTGC
TGCCTGTTGCCAGTTCTGACTTGTTAGGCAGGCAATCATATTCTTATCTGG
ATGGAACTCAAGGAATTGTAATGGCAGTAGCATTATAACCACCTATATGAT
CGAGTTGCAGGAATAGCGCTAACGTTACCTCTTCAGTGTGTTCAATGTTG
ATATTGGTCGACTAAAGATAGTTGACCAAGATGAAGGTCAAAACGCTT
GATTCCAATGAATATTACTATGCTCTATACTACCTTTAATACAGGTATTGT
ATGTTATAGAGAGTTATAATGTGATACCGACTTAAATTCGTAATTGTC
GTTATTGTCTATCTTATTGATTCTGATCTCATTTAAGCCAATATA
CCAAACAAAAGGTTCAAAATGAGATAATGGCACAAAAGGAAGCTCAGATT
GAAATATCACCCAGTATAGTCAGCAAATAGAATCTCTTACAAGGATATT
AAGTTCCGCCATGATTATCTGAATATTAACTAGCCTCAGATTAGGCATT
AAAATAAAGATTAGCTAGTATTGAAAAGATTACCATCAAATCTTAGAAAA
AACAGGACATCAATTGCAGGATACCGTTATAATATCGGCCATCTAGCTAAT
ATTCAAAACGATGCTGTCAAGGGTATCTGTCAGCAAAATCTTAGAAGCT
AGAATAAAAAGATTGCTGTCAATGTAGAAGTCTCAAGTAAATACAACGCC
TGAGATGGAGTTGCTGATTCTCATTACCATCTTCTATCTTGTGATAATGC
CATTGAGGCTGTTCGAATCATTAAATCCTGAAATTCAAGTTAGCCTTTTA
AGAAAAATGGCAGTATAGTCTTATCATTAGAATTCCACCAAGAAAAACA
AATAGATGTGAGTAAATTTAAAGAAAATTCACCAAGGCTCCAAT
CGCGGTATTGGTTAGCAAAGGTGAATCATATTCTGAACATTATCCCAC
CAGTTACAAACAAGCAATCATCATCATTATTCAAGCAACTCCTAATAATA
AA]TAG



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Figure 2D.

[ATGATTCTATTTGTATTGAAAGATGATTTTACAACAAAGGACGTCTGAAACCAC
CATTGCAGCTATCATGAAAGAAAAAATTGGTCTTATAAAGAATTGACTATTTTGAAA
ACCACAAACAACCTATTGACGCTATCCCTGAAAAGGGCAATCACCGATTTCTTTGGA
TATTGAAATCAAAAAGAGGAAAAGAAAGGACTGGAAGTAGCCAATCAGATTAGACAGCA
TAATCCTAGTGCAGTTATTGTCTTGTACGACACATTCTGAGTTATGCCCTCACTTT
TCAGTATCAGGTATCTGCTTGGATTATTGATAAAATCTTGAATCCTGAGGAGTTCTC
CCACCGCATTGAATCAGCGCTGTATTATGCTATGGAAAACAGCCAGAAGAATGGTCAATC
AGAGGAACCTTTATTTCATTCACTGAAACTCAGTTCAGGTCCCTTGCTGAGAT
TCTGTATTTGAAACATCTTCAACAGCCCATAAGCTCTGCCTTATACTTATGATGAACG
GATTGAATTCTACGGCAGTATGACTGACATTGTTAAAATGGATAAGAGACTTTTCAGTG
CCATCGCTTTATTGTCAATCCTGCCAATTACCGTATTGATCGGAAAAACGCTT
GGCCTATTTGAAATAAAAGTCTTGTCTTATTCACTGAACTAAGTTAACAAAATGAG
AGCTGTGATTGCTGATCAAAGGAGAGCAAAA] TGA



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Figure 9A

Sequence Range: 1 to 2557

10 20 30 40 50
ACATTATGTGCTTAAGGAAATATTACTTTCAAGAAAATCCATGATT
TGTAATACACAGGATTCCCTTATAATGAAAAAGTCTTTAGGTACTAA
<K K L F I W S K
<

60 70 80 90 100
TTTCATAAAAAAATAGTATACTAATTATAATCAAAAAAGGAGATATAAA
AAAAGTATTTTATCATATGATTAATATTAGTTTTCCCTATATT
<K M F F L I S I I I L F L L Y L
<

110 120 130 140 150
ATGAAAAAAACACTATCATTAAGGAAAGCTTAAAGAAATTAAGACTGA
TACTTTTTGTGATAGTAATTTTACTGAAATTCTTTAATTCTGACT
M K K T L S L K N D F K E I K T D
ORF RF[2] >
<I F F V S D N F F S K L S I L V S
<

160 170 180 190 200
TGAATTAGAGATTATCATGGCGGAAGCGGAAGCCTATCAACATTTC
ACTTAATCTCTAACAGTAAACGCCCTCGCCTCGGATAGTTGAAAAAGG
E L E I I I G G S G S L S T F F
ORF RF[2] >
<S N S I I M
<

210 220 230 240 250
GGCTGTTAACAGAAGTTTACACAAGCTTGGAAAATAAGATAGGCTA
CCGACAAATTGTCCTCAAATGTGTTGAAACCCCTTATTCTATCCGAT
R L F N R S F T Q A L G K
ORF RF[2] >

260 270 280 290 300
ACATTGGAATAAAACAAGGCTGGATTATTATTCCAGCCTTTAAATGT
TGTAACCTATTGTTCCGACCTAAATAAGTCGGAAAATTACA

310 320 330 340 350
AAAATAAAAATACAGGGTTAATAATCAAGTGTGCTGCGATGAGAA
TTTATTATTATGTCCAATTATTAGTTCACACGACAGCACCTACTCTT

360 370 380 390 400
GATAAAACTATCTCTAGAGAATAGGCCTCCTCTATTATTATTAGGAG
CTATTGATAGAGAATCTCTTATCCGGAGGAGATAAAATAATAATCCTC
<K I I L L
<ORF RF[]

410 420 430 440 450
TTGCTTGAATAATGATGATGATTGCTTGTAAACTGGTTTGGGAT
AACGAACCTATTACTACTAACGAACAAACATTGACCAAAACCCTA
<Q K F L H H H N S T Q L S T K P Y



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Figure 9B

<_____ ORF RF [4] C _____>

460 470 480 490 500
AATGTTCAAGAATATGATTCACCTTGCTAAACCAATACCGCGATTGGAG
TTACAAGTCTTATACTAAGTGGAAACGATTGGTTATGGCGCTAACCTC
<H E L I H N V K A L G I G R N S
<_____ ORF RF [4] C _____>

510 520 530 540 550
CCTTAGTGGAAATAGTTCTTAAAAATTACTCACATCTATTGTTT
GGAAATCACCTTATCAAAAGAAATTAAAATGAGTGTAGATAAACAAA
<G K T S Y N E K F I K S V D I Q K
<_____ ORF RF [4] C _____>

560 570 580 590 600
TTCTTGGTGAATTCTGAATGATAAAGACTATACTGCCATTTCTTAA
AAGAAACCACCTTAAGACTTACTATTCTGATATGACGGTAAAAGAATT
<E K T S N Q I I F V I S G N K K F
<_____ ORF RF [4] C _____>

610 620 630 640 650
AAAAGGCTAACTGAATTCAGGATTAATGATTGAAAGCAGCCTCAATG
TTTCGATTGACTAAAGTCCTAAATTACTAAGCTTCGTCGGAGTTAC
M>
>
<F A L Q I E P N L S E F A A E I
<_____ ORF RF [4] C _____>

660 670 680 690 700
GCATTATCACACAAGATAGAAAGTATGGTAATGAAATCAAGCAACTCCAT
CGTAATAGTGTGTTCTATCTTCTACATACCATTACTTTAGTCGTTGAGGTA
A L S H K I E S M V M K S S N S I>
<A N D C L I S L I T I F D L L E M
<_____ ORF RF [4] C _____>

710 720 730 740 750
CTCAGGCAGTTGTATTTACTTGAGACTTCTACATTGACAGCAATCTTT
GAGTCGTCAACATAAAATGAACCTCTGAAGATGTAACTGTCGTAGAAAA
S G S C I L L E T S T L T A I F>
<E P L Q I K S S V E V N V A I K K
<_____ ORF RF [4] C _____>

760 770 780 790 800
TATTCTGAGCTTCTAAGATTTGCTGACAAGATAACCTTGACAGCATCG
ATAAGACTCGAAGATTCTAAAACGACTGTTCTATGGAACTGTCGTAGC
L F>
>
<N Q A E L I K A S L I G K V A D
<_____ ORF RF [4] C _____>

810 820 830 840 850
TTTGAAATTAGCTAGATGGCCGATATTATAACGGGTATCCTGCAATTG
AAAACCTATAATCGATCTACCGGCTATAATTGCCATAGGACGTTAAC
<N Q I N A L H G I N Y R T D . Q L Q
<_____ ORF RF [4] C _____>



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Figure 9C

860 870 880 890 900
ATGTCCTGTTTCTAAGATTGATGGTAAATCTTTCAATACTAGCTA
TACAGGACAAAAAGATTCTAAACTACCATTAGAAAAGTTATGATCGAT
<H G T K E L I Q H Y I K E I S A L
<_____ ORF RF[4] C _____

910 920 930 940 950
AATCTTTATTTCAATGCCTAATCTGAGGCTAGTTAAAATATTAGATAA
TTAGAAATAAAAGTTACGGATTAGACTCCGATCAATTATAAGTCTATT
<D K N E I G L R L S T L I N L Y
<_____ ORF RF[4] C _____

960 970 980 990 1000
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AGTACCGCCTTGAGCTTATAGAACATTCTCTAAGATAAACGACTGA
M A E T S N I L V K R F Y L L T>
<D H R F S R I D K Y L S E I Q Q S
<_____ ORF RF[4] C _____

1010 1020 1030 1040 1050
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TATGACCCACTATAAGCTTAGACTCGAAGGAAAACACGGTAATAGAGTA
I L G D I S N L S F L L C H Y L I>
<Y Q T I N R I Q A E K Q A M I E N
<_____ ORF RF[4] C _____

1060 1070 1080 1090 1100
TTTGAACCTTTGTTGGTATATTGGCTAAAAATGAGATCAGAACAA
AAACTTGGAAAACAACCATATAACCGAACCTTACTCTAGTCTAGTTT
L N L L F G I L A>
<Q V K Q K T Y Q S L F S I L I L
<_____ ORF RF[4] C _____

1110 1120 1130 1140 1150
AATAAAATAAGATAGACAATAACGACAAATTACGAAATTAAAGTCGG
TTATTTATTCTATCTGTTATGCTGTTAAATGCTTAAATTCAGCC
<F L I L Y V I V V F K R F K L T P
<_____ ORF RF[4] C _____

1160 1170 1180 1190 1200
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ATAGTGTAAATTGAGAGATATTGTATGTATGGACATAATTCCATCA
<I V N Y S E I V Y L V Q I L L Y Y
<_____ ORF RF[4] C _____

1210 1220 1230 1240 1250
ATAGAAGCATAGTAATATTCAATTGGAATCAAGCGTTTGACCTTCATC
TATCTTCGTATCATTATAAGTAACCTTAGTCGAAAAACTGGAAGTAG
<L L M T I N M P I L R K K V K M
<_____ ORF RF[4] C _____

1260 1270 1280 1290 1300
TTGGTCAAACATCTTAAGTCGACCAATATCAACATTGAACACACTGAG



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Figure 9D

AACCAGTTGATAGAAATTCAAGCTGGTTATAGTGTAACTTGTGTGACTC
< K T L S D K L R G I D V N F V S L
< _____ ORF RF[4] C _____

1310 1320 1330 1340 1350
AAAGAGGTAACCTAGCGCTATTCCCTGAAACTCGATCATATAGGTGGTTA
TTTCTCCATTGAATCGCGATAAGGACGTTGAGCTAGTATATCCACCAAT
< F L Y S L A I G A F E I M Y T T I
< _____ ORF RF[4] C _____

1360 1370 1380 1390 1400
TAATGCTACTGCCATTACAATTCCCTGAGTTCCATCCAAGATAAAGAAT
ATTACGATGACGGGTAATGTTAAGGAACCTCAAGGTAGGTTCTATTCCTTA
< I S S G M V I G Q T G D L I F F
< _____ ORF RF[4] C _____
< L E K L E M W S L S Y
< _____

1410 1420 1430 1440 1450
ATGATTGCCGCCTAAACAAGTCAGAACTGGCAACAGGCAGCACCCATA
TACTAACGGCGGATTGTTCACTGACCGTTGTCGCTCTGGTAT
< I I A R R F L D S S A V P L L G Y
< _____ ORF RF[4] C _____
< S Q G G L C T L V P L L C C V M
< _____

1460 1470 1480 1490 1500
AAATATATTTAGAGAAAAGACTATTCTGTCTATTAAGATAAATTGATAAAG
TTTATATAAAATCTCTTCTGATAAGACAGATAATTCTATTTAACTATTC
< F I N L S L S N Q R N L Y I S L A
< _____ ORF RF[4] C _____

1510 1520 1530 1540 1550
CTATAAAATAAAGAGGCTCTGCAGGATAAAACAGGTTCACGTTACCATC
GATATTTATTCCTCGAGACGTCCTATTGTCACGAAATGCAAGTGGTAG
< I F Y L P E A P Y F L N V N V M
< _____ ORF RF[4] C _____

1560 1570 1580 1590 1600
GTAACAGCAATCATTATCAGAAAATTGCTTACGAAAAAGAGTTAAC
CATTGTCGTTAGTAATAGTCTTTAACGAATAGCTTTCTCAATTAAG
< T V A I M I L F N S I S F L T L E
< _____ ORF RF[4] C _____

1610 1620 1630 1640 1650
CTTTTCGATAAAAGTGACATTACTACCTAGAAAATAGAAACAAGAGAA
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< K K S L T V N S V K S F L F L L F
< _____ ORF RF[4] C _____

1660 1670 1680 1690 1700
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TATCTGCCAATCTATTCAATTATTGGTAAACTTTCATAGTAATTCCGA
< L V T L Y T L L G N S L I M L A
< _____ ORF RF[4] C _____

1710 1720 1730 1740 1750



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Figure 9E

TCATTCA~~T~~TTGCTCCTTGATCAGCAATCACAGCTCTCAGTTTGTT
AGTAAGTAAACGAGAGGAAACTAGTCGTTAGTGTGAGAGTCAAAACAA
<E N M
<
<K A R R Q D A I V A R L K T
<ORF RF[5] C

1760 1770 1780 1790 1800
AACTTAGTCGTGAAATAAGACAAGACTTATTATTCGAAAATAGGCCAA
TTGAATCAAGCACTTATTCTGTTCTGAATAATAAGCTTTATCCGGTT
<L K T R S I L C S K N N R F Y A L
<ORF RF[5] C

1810 1820 1830 1840 1850
GCGTTTTCCGATCAATACGGTAATATTGGCAGGATTGACAATAAAG
CGCAAAAAAGGCTAGTTATGCCATTATAACCGTCTAACTGTTATTTC
<R K K R D I R T I N A P N V I F S
<ORF RF[5] C

1860 1870 1880 1890 1900
AGCGATGGCACTGAAAAAGTCTCTTATCCATTAAACAATGTCAGTCATA
TCGCTACCCTGACTTTTCAGAGAATAGGAAAATTGTTACAGTCAGTAT
M A L K K S L I H F N N V S H>
<R H C Q F L R K D M K V I D T M
<ORF RF[5] C

<V
<

1910 1920 1930 1940 1950
CTGCCGTAGAATTCAATCCGTCATCATAGTATAAAGGCAGAGCTTATG
GACGGCATCTAACGTTAGGCAAGTAGTATTCAATTCCGTCTCGAATAC
T A V E F N P F I I S I K A E L M>
<S G Y F E I R E D Y T Y L C L K H
<ORF RF[5] C
<A T S N L G N M M L I F A S S I
<ORF RF[6] C

1960 1970 1980 1990 2000
GGCTGTTGAAGATGTTCAAAATACAGAATCTCAGCAAAAGGGACCTGAA
CCGACAACTTCTACAAAGTTATGTCAGAGTCGTTCCCTGGACTT
G C>
<A T S S T E F Y L I E A F P V Q F
<ORF RF[5] C
<P Q Q L H K L I C F R L L L S R F
<ORF RF[6] C

2010 2020 2030 2040 2050
ACTGAGTTCAAGATGAATGGAAAATAAAAGTCTCTGATTGACCATTG
TGACTCAAAGTCTACTTACCTTATTTCAGGAGACTAACTGGTAAG
<Q T E S S H F I F L E E S Q G N
<ORF RF[5] C
<S L K L H I S F L F N R Q N V M R
<ORF RF[6] C



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Figure 9F

2060 2070 2080 2090 2100
TTCTGGCTGTTTCCATAGCATAATACAGCGCTGATTCAATGCCGGTGGGA
AAGACCGACAAAAGGTATCGTATTATGTCGCAGTAAGTTACGCCACCC
<K Q S N E M A Y Y L A S E I R H S
< ORF RF[5] C
<R A T K W L M
< ORF RF[6] C

2110 2120 2130 2140 2150
GAACCTCCTCAGGATTCAAAGATTATCAATAAAATCCAAAGCAGATAACCT
CTTGAGGAGTCCTAACGTTCTAACATAGTTAGTTAGGTTCGTCTATGGA
<F E E P N L S K D I F D L A S V Q
< ORF RF[5] C

2160 2170 2180 2190 2200
GATACTGAAAAGTGGAGGGGCATAAAACTCAGAATGTGTCGTGACAAAGACA
CTATGACTTTCACTCCCCGTATTGAGTCTTACACAGCACTGTTCTGT
M C R D K D>
>
<Y Q F T L P M F E S H T T V F V
< ORF RF[5] C

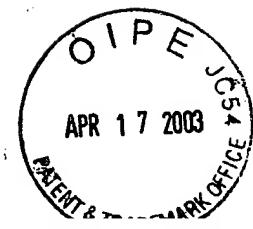
2210 2220 2230 2240 2250
ATAACTGCACTAGGATTATGCTGTCTAACATCTGATTGGCTACTTCCAGTC
TATTGACGTGATCCTAACACAGATTAGACTAACCGATGAAGGTCAGG
N N C T R I M L S N L I G Y F Q S>
>
<I V A S P N H Q R I Q N A V E L G
< ORF RF[5] C

2260 2270 2280 2290 2300
TTTCTTTCTCTTTGATTCAATATCCAAAAAGAAAATCTGGTGAT
AAAGAAAAGGAGAAAAACTAAAGTTAGGTTCTTAGACCACTA
F L F L F F D F N I Q K E N L V I>
>
<K K E E K K I E I D L F F I Q H N
< ORF RF[5] C

2310 2320 2330 2340 2350
TGCCCTTTCAGGGATAGCGTCAATAAGTTGTTGTGGTTCCAAAAATA
ACGGGAAAAGTCCCTATCGCAGTTATTCAACACACCAAAAGGTTTAT
A L F R D S V N K L L W F S K N>
>
<G K E P I A D I L Q Q P K G F I
< ORF RF[5] C

2360 2370 2380 2390 2400
GTCAATTCTTATAAGACCAATTTCATGATAGCTGCAATGGT
CAGTTAAGAAATATTCTGGTTAAAAAAAGAAAGTACTATCGACGTTACCA
S Q F F I R P I F F H D S C N G>
>
>
<T L E K Y S W N K E K M I A A I T
< ORF RF[5] C

2410 2420 2430 2440 2450



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Figure 9G

GGTTTCAAGACGTCCTTGTTGTAAAAAATCATCTTCCAATACAAAAATAG
CCAAAGTTCTGCAGGAACAAACATTTTAGTAGAAGGTTATGTTTATC
G F K T S L L>
V S R R P C C K K S S S N T K I>
<T E L R G Q Q L F D D E L V F I S
<----- ORF RF[5] C ----->
2460 2470 2480 2490 2500
AAATCATTATTCTCTTTAATCTCTATTAGGTTAGCTGATTAACACT
TTTAGTAATAAAGAGGAAATTAGAAGATAATCCAATCGACTAATTGTGA
E I I I S P L I F Y L G>
<I M
<
2510 2520 2530 2540 2550
ATACACAGAAAAGGTATAAACGATATCACTCAATAAAATCTACTAACTT
TATGTGTCTTTCCATATTTGCTATAGTGAGTTATTAGATGATTGAA
AATAACC
TTATTGG



Figure 11A.

ATGAAACAAGTTATTTATGTTGGTTAACCGTCATGCCGTTAACATTCTTAGAGATT
ATCAAAAGAGTAACAAAAAGGGGAGGGACAGTTCGTCATCTAACATTACAGATGGG
CAGTCTAAGTTGTTGGCGCAGACATTATAAGCTAGTACCTCAGATTGATACCAGAGAC
TGTGGGCCGGCAGTGCTGCATCTGTTGCAAAGCATTACGGATCTAATTACTCTATCGCT
TATCTCGGGAACTCTCAAAGACTAACAGCAGGAACAACAGCTCTGGCATTGTTGAA
GCTGCTAAAAGTTAGGCTTGAAACACGCTCTATCAAGGCGGATATGACGCTTTGAT
TATAATGATTGACCTATCCTTATCGCCATGTGATTAAAGGAAAACGTCTGCAGCAT
TATTATGTCGTCTATGGCAGCAGAATAATCAGCTGATTATTGGAGATCCTGATCCTCA
GTTAAGGTGACTAGGATGAGTAAGGAACGCTTCAATCAGAGTGGACAGGCCTGCAATT
TTCCTAGCTCCTCAGCCTAACTATAAGCCTATAAAGGTGAAAAAAATGGTTGTCTAAT
TTCTTCCCCTGATCTTAAGCAGAAAGCTTGATGACTTATATTATCATAGCTAGCTG
ATTGTGACGCTCATTGATATTGTCGGATCATACTATCTCCAAGGAATATTGGACGAGTAC
ATTCCCTGATCAGCTGATTCAACTTTAGGAATGATTACGATTGGTCTGATAATAACCTAT
ATTATCCAGCAGGTCTGGCTTTGCAAAAGAATAACCTCTGGCGTACTCAGTTGCGT
TTAGTCATTGATGTTATCCTGTTATCACAAACATATTTCACGCTTCTATGTCTTTC
TTTGCAGCAAGGCGAACAGGAGAAATCACGTCTCGTTACAGATGCCAATCAGATTATT
GATGCTGTAGCGTCAACCATTTCATCTTTAGATATGACTATGGTAATTGGTT
GGTGGGGTTTGTGGCGCAAAACAATAACCTTCTTCAACCTGCTCTCCATTCCG
ATTATGCCATCATTATTTGCTTCTGAAACCCCTTGAGAAAATGAATCACGAAGTG
ATGGAAAGCAATGCTGTTAAGTTCTTATCATTGAAGATATCAATGGGATGGAAACC
ATTAAATCACTCACAAGTGAGTCCGCTCGTTATCAAAACATTGATAGTGAATTGTTGAT
TATTGAGAAAACCTTAAGCTACACAAGTATAGGCCATTCAAACCGCATTAAAAGC
GGTCTAAGCTTATCCTCAATGTTGTCATTCTCTGGTATGGCTCTCGTCTAGTTATGGAT
AATAAAATCTCAGTTGGTCAGCTTATCACCTTAATGCTTGCTGTCTTATTCTCAAAT
CCAATTGAAAATATTCAATCTGCAATCCAAACTGCAGTCAGCTCGCGTTGCCAATACA
CGTCTTAATGAGGTCTATCTGTCGAATCTGAATTGAAAAGACGGCGATTATCAGAA
AATAGCTTTAGATGGTGAATTTCGTTGAAAATCTTCTTATAAAATATGGATTGGG
CGAGATACCTTATCAGATATTAATTCAATCAACAAAAAGGCTCCAAGGTCAAGTCTAGTT
GGAGCCAGTGGTTCTGGTAAAACAACCTTGGCTAAACTGATTGTCATTCTACGAGCCT
AACAAAGGGATTGTCGAATCAATGGCAATGATTAAAAGTTATTGATAAGACAGCTTG
CGGCCGCATATTAGCTATTGCGCAACAGGCCTATGTTTAGTGGCTCTATTATGGAT
AATCTCGTTTAGGAGCTAAAGAAGGAACGAGTCAGGAAGACATTATCGTGTGAA
ATTGCTGAAATCCGCTCGGACATTGAACAAATGCTCAGGGCTATCAGACAGAGTTATCA
GATGGTGCCGGTATTCTGGCGGTAAAAACAGCGGATTGCTTAGCTAGGGCTTATTA
ACACAGGCACCGGTTGATTCTGGATGAAGCCACCAGCAGTCTGATATTGACAGAA
AAGAAAATTATCAGCAATCTCTTACAGATGACGGAGAAAACAATAATTGGTGTGCCCCAC
CGCTTAAGCATTTCACAGCGTACTGACGAAGTCATTGTCATGGATCAGGGAAAAATTGTT
GAACAAGGCACTCATAGGAACCTTGTAGCTAAGCAAGGTTCTATTATAACCTGTTAAT



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Figure 11B.

MKQVIYVVLIVIAVNILLEIIKRVTKRGTVSSSNPLPDGQSKLFWRRHYKLVPQIDTRD
CGPAVLASVAKHYGSNSIAYLRELSTKNQGTTALGIVEAAKLGFETRSIKADMTLFD
YNDLTYPFIVHVIKGKRLQHYYVYGSQNNQLIIGDPDPSVKVTRMSKERFQSEWTGLAI
FLAPQPQNYKPHGEKNGLSNFFPLIFKQKALMTYIIIASLIVTLIDIVGSYYLQGILDEY
IPDQLISTLGMITIGLIITYIIQQVMAFAKEYLLAVSLRLVIDVILSYIKHIFTLPMSF
FATRRTGEITSRFTDANQIIDAVASTIFSIFLDMMTIVLVGGVLLAQNNNLFFLTLSSIP
IYAIIFIAFLKPFEKMNHVMESNAVSSSIEDINGMETIKSLTSESARYQNIDSEFVD
YLEKNFKLHKYSAIQTALKSGAKLILNVVILWYGSRLVMDNKISVGQLITFNALLSYFSN
PIENIINLQSKLQSARVANTRLNEVYLVESEFEKDGDLSSENSFLGDISFENLSYKGFG
RDTLS DINLS IKKGSKVSLVGASGSGKTTLA K LIVNF YEPNKGIVR INGNDLKVIDKTAL
RRHIS YLPQQAYVFSGSIMDNLVLGAKEGTSQEDIIRACEIAEIRS DIEQMPQGYQTELS
DGAGISGGQKQRRIALARALLTQAPV L I DEATSSL DILTEKKIISNLLQMTEKTIIFVAH
RLSISQRTDEVIVMDQGKIVEQGTHKELLAKQGFYYNLFN

Figure 11C.

ATGGATCCTAATTTCACAAAGTCAGAATTAGGAGACGCTATCATAATTGCG
ACACTATTAAATTGTCCTTGGTCTGCTTGATTATCTTCTGGTCATATTCTTTGTTT
GCTAAAAAAGAAATTACAGTGATTCTACTGGTAAGTTGCACCAACAAAGGTTGTAGAT
GTTATCCAATCTTACAGTGACAGTTCAATCATTAAAATAATTAGATAATAATGCAGCT
GTTGAGAAGGGAGACGTTTAATTGAATATTCAAGAAAATGCCAGTCAAACCGTCAGACT
GAACAAAAGAATATTATAAAAGAAAGACA AAAACGAGAAGAGAAGGAAAAGAAAAAACAC
CAAAAGAGCAAGAAAAGAAGAAGTCTAAGAGCAAGAAAGCTTCAAAGATAAGAAAAG
AAATCGAAAGACAAGGAAAGCAGCTCTGACGATGAAATGAGACAAAAAGGTTCGATT
TTTGCTTCAGAAGATGGTATTATTCAACCAATCCAAATATGATGGTGCCAATTATT
CCGAAGCAAACCGAGATTGCTCAAATCTATCCTGATATTCAAAAACAAGAAAAGGTTA
ATCACCTATTATGCTTCTCTGATGATGTTGTTCTATGAAAAGGGCAAACCGCTCGT
CTTCCTGGAAAAAAAGGGAAATGACAAGGTTATTGAAGGAAAATTAAACATGTC
GCTTCATCAGCAACTACTACTAAAAAGAAATCTCTTAAGGTTACTGCCAAAGTAAAG
GTTCTAAGAAAATAGCAAACCTCATCAAGTATGGTATGACAGGCAAGACAGTCACTGTC
ATTGATAAAAAGACTTATTTGATTATTCAAAGATAATTACTGCATAAAATGGATAAT

Figure 11D.

MDPKFLQSAEFYRRRYHNFATLLIVPLVCLIIFLVIFLCFAKKEITVISTGEVAPTKVD
VIQSYSDSSIICKNLDNNAAVEKGDLIEYSENASPNRQTEQKNIIKERQKREEKEKKHH
QKSKKKKSKSKASKDKKKSKDKESSSDDENETKKVSIFASEDGIIHTNPKYDGANII
PKQTEIAQIYPDFIQKTRKVLITYYASSDDVVSMKGQTARLSLEKKGNDKVVIEGKINNV
ASSATTKKGNLFKVAKVVKNSKLIKYGMTGKTVTVIDKTYFDYFKDKLLHKMDN

